Appl. No.: 10/636,172

Amdt. Dated March 7, 2005

Response to Office Action Mailed September 7, 2004

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in this application.

1. (Cancelled).

2. (Currently Amended) A method for stabilizing operation point and optical output of an external optical modulator including a light source, an external optical modulator modulating light from the light source, an optical detector detecting output-light from said external optical modulator, and means for regulating direct current bias applied to said external optical modulator, which regulates the direct current bias determining the operation point of a modulation curve of said external optical modulator, according to output of said optical detector, comprising the steps of:

superimposing onto said direct current bias a low-frequency signal, which is frequency below a lower limit of a signal frequency band of an input signal inputted to said external optical modulator;

extracting a low-frequency component included in the output of said optical detector;

normalizing on the basis of said low-frequency signal the output of said low-frequency component;

and controlling the output-light of said light source in accordance with said normalized low-frequency component,

wherein~~;~~ :

~~the~~ a means of controlling optical output of light source is equipped, which, in control of the output-light of ~~the~~ said light source,

detects the output-light from ~~the~~ said light source,

compares ~~the value of said detection~~ a value of the detected output-light from said light source to ~~the~~ a standard value of primary optical output determining primary optical output, and adjusts the output-light of ~~the~~ said light source~~,~~;

~~and the~~ said standard value of primary optical output is modified according to ~~the~~ a ratio of ~~the~~ a primary value of ~~the~~ said normalized low-frequency component to ~~the~~ a subsequent value~~,~~;

and ~~the~~ said means of controlling optical output of light source is operated on the basis of ~~the~~ said modified standard value.

3. (Cancelled).

4. (Currently Amended) ~~The~~ A device for stabilizing operation point and optical output of an external optical modulator, which utilizes the method for stabilizing operation point and optical output of an external optical modulator, as claimed in ~~claim 1 to 3~~ claim 2.

5. (Currently Amended) The device for stabilizing operation point and optical output of an external optical modulator~~,~~ as claimed in claim 4, wherein~~;~~

~~the~~ said optical detector is a photodiode that is incorporated into ~~the~~ a module ~~including~~ comprising the external optical modulator.

6. (Currently Amended) The device for stabilizing operation point and optical output of an external optical modulator, ~~as~~ as claimed in ~~claim 4 and 5~~ claim 4, wherein;

~~the~~ said means of regulating direct current bias has an averaging circuit for obtaining ~~the~~ a mean value of output of ~~the~~ said external optical detector, and regulates the direct current bias applied to the external optical modulator in accordance with ~~the~~ a value of ~~the~~ said averaging circuit.

7. (Currently Amended) The device for stabilizing operation point and optical output of an external optical modulator, as claimed in ~~claim 4 to 6~~ claim 4, wherein; ;

a low-pass filter or band-pass filter is used in order to extract the low-frequency component included in ~~the~~ output of ~~the~~ said optical detector.

8. (Currently Amended) The device for stabilizing operation point and optical output of an external optical modulator, as claimed in ~~claim 4 to 7~~ claim 4, wherein;

~~the~~ said means of regulating direct current bias has slope-selecting means which, in fixing the operation point of the modulation curve of ~~the~~ said external optical modulator, enables ~~the~~ selection of slope of ~~the~~ said modulation curve.

9. (Currently Amended) The device for stabilizing operation point and optical output of an external optical modulator, as claimed in ~~claim 4 to 8~~ claim 4, wherein~~; the~~ said light source is a laser diode.

10. (New) The device for stabilizing operation point and optical output of an external optical modulator as claimed in claim 5, wherein

said means of regulating direct current bias has an averaging circuit for obtaining a mean value of output of said external optical detector, and regulates the direct current bias applied to the external optical modulator in accordance with a value of said averaging circuit.

11. (New) The device for stabilizing operation point and optical output of an external optical modulator according to claim 4, wherein, in control of the output-light of said light source, the output-light of light source is controlled in order that a primary value of said normalized low-frequency component may accord with a subsequent value.

12. (New) The device for stabilizing operation point and optical output of an external optical modulator as claimed in claim 5, wherein:

a low-pass filter or band-pass filter is used in order to extract the low-frequency component included in output of said optical detector.

13. (New) The device for stabilizing operation point and optical output of an external optical modulator as claimed in claim 6, wherein:

a low-pass filter or band-pass filter is used in order to extract the low-frequency component included in output of said optical detector.

14. (New) The device for stabilizing operation point and optical output of an external optical modulator as claimed in claim 5, wherein:

said means of regulating direct current bias has slope-selecting means which, in fixing the operation point of the modulation curve of said external optical modulator, enables selection of slope of said modulation curve.

15. (New) The device for stabilizing operation point and optical output of an external optical modulator as claimed in claim 6, wherein

said means of regulating direct current bias has slope-selecting means which, in fixing the operation point of the modulation curve of said external optical modulator, enables selection of slope of said modulation curve.

16. (New) The device for stabilizing operation point and optical output of an external optical modulator as claimed in claim 7, wherein:

said means of regulating direct current bias has slope-selecting means which, in fixing the operation point of the modulation curve of said external optical modulator, enables selection of slope of said modulation curve.

17. (New) The device for stabilizing operation point and optical output of an external optical modulator as claimed in claim 5, wherein said light source is a laser diode.

18. (New) The device for stabilizing operation point and optical output of an external optical modulator as claimed in claim 6, wherein said light source is a laser diode.

19. (New) The device for stabilizing operation point and optical output of an external optical modulator as claimed in claim 7, wherein said light source is a laser diode.

20. (New) The device for stabilizing operation point and optical output of an external optical modulator as claimed in claim 8, wherein said light source is a laser diode.